

## European Regional Development Fund (ERDF)

Overall investment from EU funds into research and innovation has reached over £500 million. The current ERDF portfolio is expecting to raise £230 million in competitive research and innovation funding by the end of the Operational Programme supporting a number of projects bringing business and academic partners together to translate academic research into product innovation. These investments are delivering significant impact, from playing a key role in ground breaking developments, supporting unique projects, developing advances in legal technology, supporting universal access to justice and helping to tackle cybercrime. As well as providing additional support to the COVID 19 response.

£119 million EU funds are supporting renewable energy and energy efficiency projects, such as local community energy schemes and energy efficiency improvements of low income homes, reducing fuel poverty and driving Wales' transition to a low carbon future. This includes £74m investment in Marine Energy research and development, establishing demonstration sites and test areas in both North and West Wales, supporting Welsh and international companies to develop and test marine energy technology in Wales.

Wales has benefited through the structural fund programme. ERDF aims to reduce economic, environmental and social problems in areas, with a specific focus on sustainable urban development.

The key priorities for ERDF

- Research and Innovation
- SME Competitiveness
- Renewable Energy and Energy Efficient
- Connectivity & Urban development



# RESEARCH and INNOVATION

Collaboration and partnership work has been key to bringing University academia, students, local individuals, organisations and businesses together to share knowledge, expertise and skills to boost the economy which is interdependent with the environment, society and culture in order to sustain long term development initiatives.

Delivering projects in collaboration with Higher Education institutes and industry provides a number of benefits for the use of European Regional Development fund as it allows projects to deliver on a larger scale, enabling them to recruit additional number of researchers and procure additional equipment.

Below are the European Research & Development funded Priority 1 projects based in North Wales with their specific objectives, to increase competitiveness and private research funding and translate research and innovation into new and commercial products, processes and services. Please see some of the projects case studies.

ERDF Priority 1 RESEARCH & INNOVATION	
<p><b>Specific Objectives:</b> Increase competitiveness and private research funding Translate research &amp; innovation into new and improved commercial products, processes and services</p>	
<p><b>SER Cymry 11</b> Working in synergy with Horizon 2020 funding to continue to enhance specialist research capacity building this scheme has already achieved, and encourage and accelerate exceptional collaborations in research and innovation by providing additional strands of funding opportunities.</p>	<p><b>SMART Cymru</b> Co-invests in business research, development &amp; innovation for sustainable growth. It supports Welsh businesses to develop, implement and commercialise new products, processes and services. <b>SMART Expertise</b> offers financial support to innovative collaboration projects that require a range of expertise to solve industry problems. <b>SMART Innovation</b> offers expert &amp; impartial innovative advice and support for Welsh businesses seeking to undertake Research &amp; Development.</p>
<p><b>M-SPARC</b> M-SParc constructed to provide accommodation and ancillary services for science based industry facing projects. Providing support for the development of smart specialisation clusters with a focus on commercialising research and development and innovation in the low carbon energy and environment.</p>	<p><b>Centre for Environmental Biotechnology</b> Establish facility for finding &amp; producing enzymes &amp; biomolecules of industrial relevance, used in production of food, pharmaceuticals, agri-tech, new materials &amp; environmental clean-up as biological solutions are discovered that replace chemical processes.</p>
<p><b>SHELL FISH Centre</b> The Centre will collaborate with businesses to deliver science to support growth &amp; investment through new production &amp; processing technologies, identification of new production areas, product diversity &amp; overcoming environmental constraints on industry growth, productivity &amp; marketability.</p>	<p><b>Digital Signal Processing (DSP) Centre of Excellence</b> Undertakes highly specialised research into digital communication systems such as 5G networks &amp; ecosystems. Collaborating closely with Welsh &amp; international academic &amp; industrial partners to provide a huge array of economically critical signal processing applications.</p>
<p><b>SEACAMS2</b> Supports developing economic opportunities in Low Carbon, Energy &amp; Environment through specialisation in commercial application of research &amp; innovation in marine renewable energy &amp; climate change resilience &amp; resource efficiency in Wales.</p>	<p><b>Centre for Photonics Expertise (CPE)</b> Unify all Wales Photonics research capability to deliver cross sector, industry driven photonics solutions, strengthening the photonic market for future investment to build Welsh economy.</p>
<p><b>Mentor Môn – Marine Characterisation Research Project (MCRP)</b> Ensure safe phased deployment of tidal energy turbines in Morlais Demonstration Zone</p>	<p><b>Smart Efficient Energy Centre – SEEC</b> A Research centre working across three low carbon energy sectors: ocean energy, nuclear energy, and energy efficient structures. The three themes are interconnected by a common cyberinfrastructure hub.</p>



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# RESEARCH and INNOVATION

## M-SPARC - Anglesey

M-SParc constructed to provide accommodation and ancillary services for science based industry facing projects. Providing support for the development of smart specialisation clusters with a focus on commercialising research and development and innovation in the low carbon energy and environment.

Officially opened in 2018 as Wales' first Science Park, M-SParc is the home of innovation and excitement in North Wales. M-SParc was established to drive innovation forward and provide economic growth. From workshops for children and schools, talks and conferences for businesses, to developing new and innovative solutions. With expert business support available to all tenants to help businesses thrive and grow in North Wales. M-SParc will ignite the economy, inspire the people & innovate for the environment; all for a sustainable Wales!

M-SParc facilitates events with partners including Microsoft and Google, while also putting the brightest and best local talent in the spotlight with sector-specific events. Children and young people bring the space to life when they attend STEM events, helping bridge the skills gap and create opportunities for the future generations. With over 70 tenants and virtual tenants calling M-SParc home, there is plenty of opportunity for collaboration. Tenants are encouraged to join regular breakfasts and BBQs to hear from experts in the region, and to make the most of peer-to-peer networking.



### Plans unveiled for ambitious second Science Park building

Wales' first dedicated science park reveals plans for developing a second building on their Anglesey site, as the first building approaches capacity. The additional space will enable Bangor University's Science Park; M-SParc to continue their work supporting businesses to grow, creating well-paid careers for local people, and inspiring future generations.



Just 5 years after opening the doors of its first building, M-SParc is ready to grow again! With a focus on supporting companies and research in the low carbon sector, and developing skills and employment opportunities, M-SParc 2.0 will help deliver M-SParc's mission to ignite ambition and innovation for a sustainable Wales.

The additional space allows M-SParc to continue ensuring that well-paid careers are created in the region. These careers include roles in technical support, research, marketing, accounting, admin support and other areas. Companies at M-SParc pay salaries of over £5,000 per year more than the Wales average. The new building already has outline planning secured and will be designed to tie-in to the existing landscape design of the science park site.

Pryderi ap Rhisiart, Managing Director of M-SParc, says

***“We’re excited to finally make this announcement, and particularly as we hear about the Freeport status for Anglesey, and the growing urgency around decarbonising the country, it can’t come at a better time.”***

M-SParc 2.0 focuses on the low carbon sector and builds upon the University's research strengths. M-SParc already has an established Low Carbon 'Egni' team who have been researching and hosting events in the sector, conducting Low Carbon reviews for companies across the region, and working towards M-SParc becoming the first science park in the UK to reach NetZero by 2030.

M-SParc was established by the University to diversify the economy, create well-paid careers, and ensure companies do not have to leave the region as they grow. This objective has been met, but M-SParc will continue to work hard to ensure that North Wales is known for innovation. Over 200 new careers have been created since 2018, and with initiatives like Dewch yn Ôl to help those who've left to move back to North Wales, and the Skills Academy to support people into industry, this number is increasing month-on-month. M-SParc have doubled the team's size this past year and continue to grow.

Bangor University's Vice Chancellor, Professor Edmund Burke, said

***“As a University, we are delighted to see our Science Park developing plans to grow and show real ambition for the economy of North Wales.”***

This expansion will continue to create well-paid careers for people and inspire future generations, while also focusing on supporting companies and research in the low-carbon sector building on the strengths of the University. The plans for development align with Bangor University's values and our strategy for the future, and we look forward to seeing the positive impact of this project on the community.”

Pryderi continues

***“The new building will also facilitate our work to bridge the skills gap in the region and provide high value employment. It's essential that young people are aware of the opportunities for careers regionally, and know that they do not have to leave to find work. We have also taken M-SParc #OnTour across the region, to ensure everyone can access opportunities in the science and tech sectors, no matter how rural their location. It's a very exciting time to live in North Wales!”***

More information about all the work we have been doing so far and more can be found [here](#).



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## Mentor Môn – Marine Characterisation Research Project (MCRP)

Research, Innovation & Development will ensure safe phased deployment of tidal energy turbines in Morlais Demonstration Zone

The Marine Characterisation Research Project (MCRP) is an important research project that is taking place in the Morlais Zone. This project, led by Menter Môn and part funded by the European Regional Development Fund through Welsh Government, is an initiative which aims to ensure marine wildlife is safeguarded as tidal energy turbines are deployed in the zone.

Onshore and offshore consents were awarded by the Welsh Government and Natural Resources Wales, respectively, in December 2021 in order to progress the Morlais Tidal Demonstration Zone (MDZ). The Morlais Project has the potential to power 180,000 homes with low carbon, clean and reliable energy, and bring employment opportunities to the area.

The Marine Characterisation Research Project (MCRP) established by Menter Môn in order to work on and implement the Environmental Monitoring and Mitigation Plan (EMMP) so as to ensure a phased approach to deployment of turbines and the safeguarding of the environment throughout the life of the Morlais project.

As part of the project, a team of experts is working to develop an Environmental Monitoring and Mitigation Plan. The aim is to gather valuable environmental research data which will support the development of Morlais tidal energy as well as other similar schemes worldwide.

To facilitate the gathering of this important data, the MCRP has commissioned an environmental monitoring buoy



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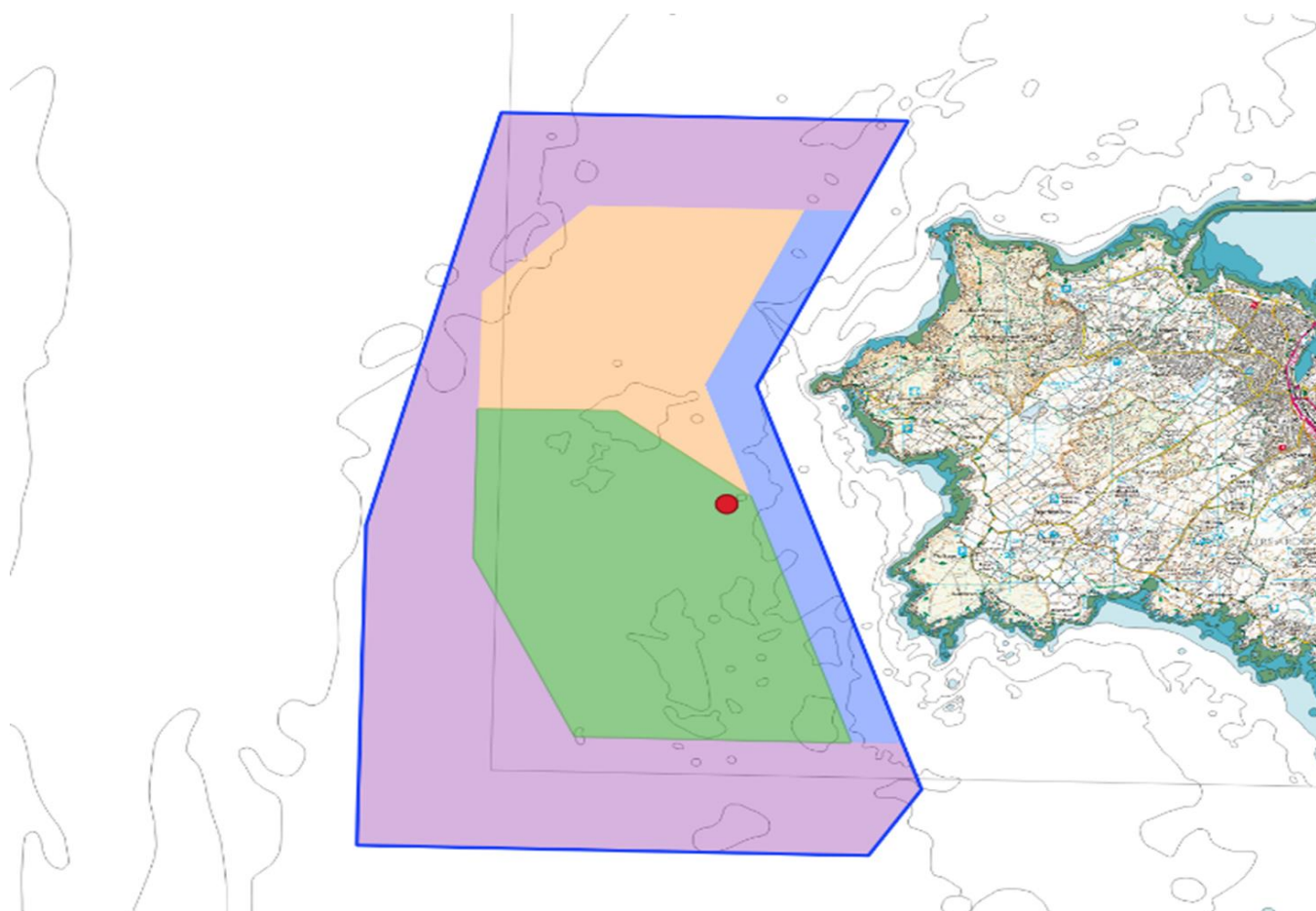
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Over the coming weeks the buoy will be launched from Holyhead equipped with data collection technology, including surface infrared and red-green-blue (RGB) cameras, as well as underwater RGB cameras, and wind speed measurements. The buoy is yellow and measures 13m x 20m (image attached). It will be visible from the land and will remain at the South Stack location during 2023 – see attached map for exact location.

Geographic Coordinate	In Decimal Degrees	In Degrees Minutes Seconds
Latitude	53.294359 N	53° 17' 39.6924" N
Longitude	4.7127230 W	4° 42' 45.8028" W

The primary focus of this work is to trial visual data collection methods as well as to analyse the data gathered around deployed turbines. The project will also identify and help the team learn more about the mammals living in the area.



Findings will be key to the growth of tidal stream energy, as the data collected here on Anglesey will be made available for future marine renewable energy projects. We will keep you updated on any progress and outcomes from this important research. We will also be updating our various stakeholder groups and the latest information will be available on the [website](#)



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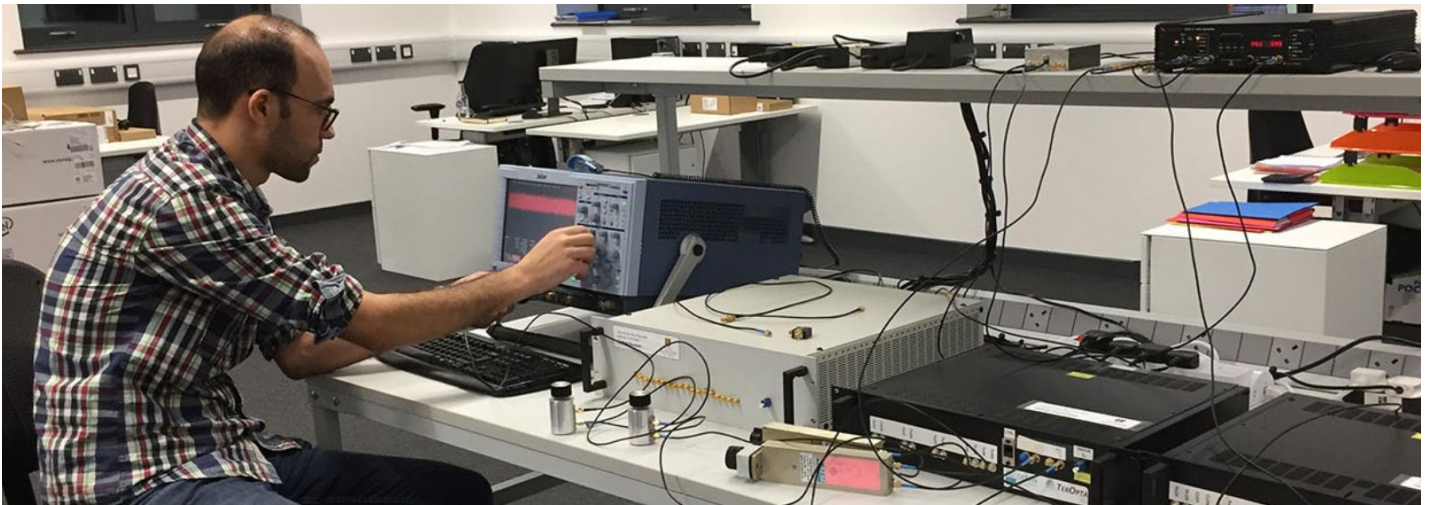
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## Digital Signal Processing (DSP) Centre of Excellence



Undertakes highly specialised research into digital communication systems such as 5G networks & ecosystems. Collaborating closely with Welsh & international academic & industrial partners to provide a huge array of economically critical signal processing applications.

The [DSP Centre of Excellence](#), with State-of-the-art equipment worth over £3.5m (Increasing to over £5.5m by 2024) is part of the School of Computer Science and Electronic Engineering in the College of Environmental Sciences and Engineering at Bangor University.

The DSP Centre has founded in 2019 with £3.9m funding from the European Regional Development Fund through Welsh Government and received an additional £3m from the North Wales Growth Deal through Ambition North Wales, Welsh Government and UK Government in 2022.

Developing leading edge digital signal processing (DSP) technologies to enable advanced and intelligent systems with a focus on communication technologies such as 5G mobile networks and their associated ecosystems.

Innovative Digital Signalling Processing algorithms embedded in network devices are a cost-effective way of speeding up networks, dynamically and optimally sharing network resources and implementing power managed devices for low-carbon networks.

Key strategic objectives of the DSP Centre are:

- Become a highly successful Welsh research institution attracting significant research funding to Wales.
- Collaborate closely with Welsh and international academic and industrial partners.
- The long-term expansion the DSP Centre to become an international-leading DSP powerhouse with significant impact on the local economy.



## SER Cymru 11

Working in synergy with Horizon 2020 funding to continue to enhance specialist research capacity building this scheme has already achieved, and encourage and accelerate exceptional collaborations in research and innovation by providing additional strands of funding opportunities.

### Boost for Sêr Cymru Programme: Building a Dynamic Scientific Base in Wales

Welsh Economy Minister, Vaughan Gething announced a £10m funding package for the internationally renowned Sêr Cymru programme over 2023-24 and 2024-25.

Set up to guarantee science's integral role in the economic and national development of Wales, the Sêr Cymru programme has continuously evolved over the last 11 years.

By aligning with changing research, development, and innovation drivers, it has responded to major challenges, such as Brexit's economic aftermath and the Covid-19 pandemic's effects.

The programme has generated an impressive £252 million in research income against a £110 million investment by the Welsh Government, proving to be a successful catalyst in building research capacity and capability in Wales.

This includes supporting Research Chairs, PhD students, postdoctoral researchers, and cutting-edge research projects, particularly those addressing the impacts of Covid-19.

The new funding round, dubbed Sêr Cymru IV, is set to support the objectives of the Welsh Government's Innovation Strategy. This strategy aims to establish Wales as a leading innovation-based nation, and Sêr Cymru stands as an essential delivery component of the Strategy.

The funding will prioritise sectors such as low carbon, life sciences, advanced engineering, and advanced computing. Likely funded activities will include PhD studentships, capacity building awards, and National Research Networks, all in line with the Welsh Government's Economic Resilience and Reconstruction Mission.

Economy Minister Vaughan Gething, announcing the launch of Sêr Cymru IV, stated,

***“Science has a huge and essential contribution to make in meeting the diverse challenges faced by Wales and the rest of the world. I’m delighted with the progress Sêr Cymru has already made, particularly with the Tech Valleys programme. The investment I’m announcing today shows Wales is a progressive, confident country which is open for business and international collaboration.”***

Echoing Minister Gething's sentiment, Chief Scientific Adviser for Wales, Professor Jas Pal Badyal FRS, emphasised,

***“Science is pivotal for Wales’ economic success. This investment in Sêr Cymru will support other interventions to inspire and nurture future generations of scientists on which so much will depend.”***

The previous phase of the Sêr Cymru programme will remain operational until the end of June 2023 when the European funding for the programme concludes.





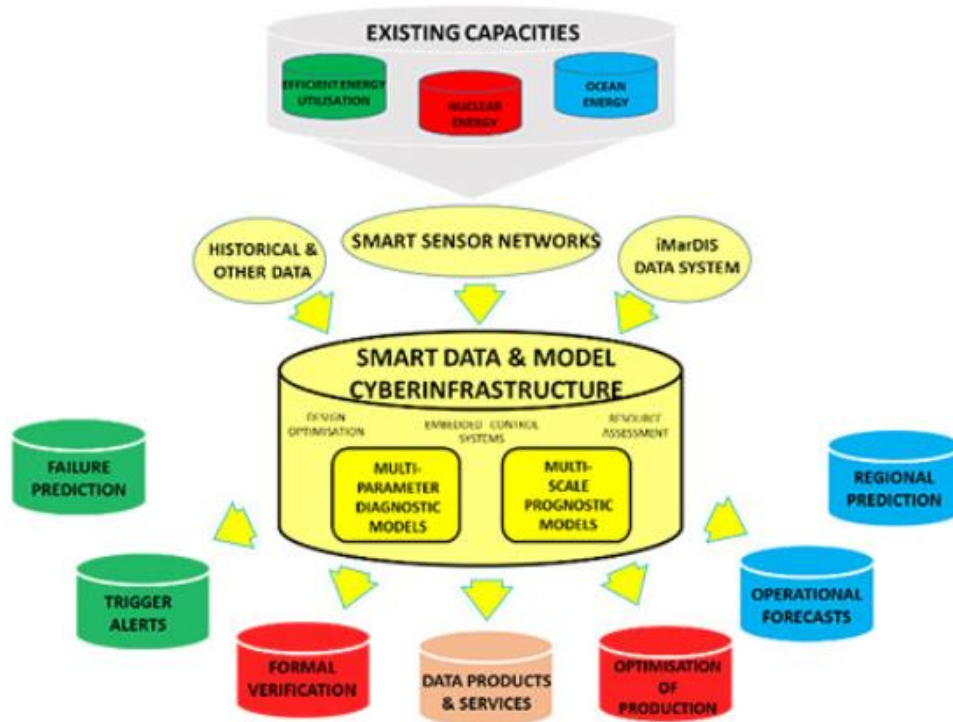
## Smart Efficient Energy Centre – SEEC

A Research centre working across three low carbon energy sectors: ocean energy, nuclear energy, and energy efficient structures. The three themes are interconnected by a common cyberinfrastructure hub.

SEEC is an interdisciplinary £7Million “big data” research centre that is addressing priorities in low carbon energy science. SEEC is part-funded by the European Regional Development Fund, administered through the Welsh Government.

SEEC is a flagship strategic development for the newly formed College of Environmental Sciences and Engineering at Bangor University. It will lead innovation on how advanced engineering, computer science and modelling can be applied most effectively to tackle grand challenges of increasing the sustainability of energy supply and utilization, while minimizing negative environmental impacts, in particular net carbon emissions.

SEEC will be instrumental in positioning Wales at the forefront of this technological revolution, which is one of the highest priorities to address within the current climate crisis.



SEEC spans three low carbon energy sectors (ocean energy, nuclear energy, and energy efficient structures), linked by a cyberinfrastructure hub. SEEC is a research and innovation centre, with a specific objective of further developing the world class expertise in low carbon energy research at Bangor University, leading to increased grant capture in this research space.

